

Minilaparoscopic Cystectomy and Appendectomy in Late Second Trimester

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ABSTRACT

Background and Objectives: Laparoscopic ovarian cystectomy and appendectomy during the early second trimester have been widely reported. However, the use of both procedures in advanced gestation is rare. We propose a minilaparoscopic approach for performing these 2 procedures in a woman 24-weeks pregnant.

Methods: We describe the case and laparoscopic management of acute abdominal pain at the 24th week of pregnancy. Microlaparoscopy under ultrasound guidance was used for the first trocar insertion to prevent injury to the uterus. It was followed by minilaparoscopic ovarian cystectomy and appendectomy.

Results: Premature contractions occurred after the operation, but they were controlled with a single tocolytic agent, and an apparently healthy female baby was born uneventfully via Cesarean delivery at 41 weeks of gestation.

Conclusion: Minilaparoscopic ovarian cystectomy and appendectomy can be carried out in the late second trimester without serious sequela.

Key Words: Minilaparoscopy, Cystectomy, Appendectomy, Pregnant.

INTRODUCTION

Approximately 1 in 500 pregnancies is complicated by a nonobstetric surgical condition.¹ Appendicitis, cholecystitis, and ileus constitute the major surgical conditions. An adnexal mass is discovered during pregnancy in 1:160 to 1:1300 women, and torsion occurs rarely in 1:5000.^{2,3} These clinical symptoms are nonspecific, and physical examination may be difficult to perform due to the enlarged uterus, making a precise diagnosis problematic. Recent improvements in fiberoptic technology have led to the development and manufacture of smaller diameter (<5 mm) laparoscopy systems. The diagnostic accuracy of microlaparoscopy has been assessed and confirmed.^{4,5} Moreover, a recent survey suggests that nonobstetrical use of laparoscopy for gynecologic surgery is safe and efficacious.⁶ We report a case with non-specific acute abdominal pain at the end of the second trimester of pregnancy which was resolved by cystectomy and appendectomy using a laparoscopic approach.

CASE REPORT

A 25-year-old woman, gravida I, in the 24th week of gestation was admitted to the emergency room due to severe right lower quadrant (RLQ) abdominal pain coinciding with nausea and vomiting. She was afebrile (36.7°C) and had urinary frequency without dysuria. The patient had no uterine contractions, vaginal bleeding, or any bowel symptoms. Stool passage was normal before the episode. The uterine height was difficult to measure due to the patient's obesity (body weight 90 Kg). Tenderness with mild rebounding pain was found on palpation of the RLQ area of the abdomen. Deep palpation on this side provoked muscle guarding. The vaginal examination showed normal cervical status. Abdominal sonography was consistent with a 24-week pregnancy without placenta or uterine abnormalities. The fetus was normal and within a 50% growth curve. No bowel dilatation or ascites were seen. The left adnexa were normal, and a right ovarian cyst measuring 6 cm in diameter was detected. The white blood cell count was slightly elevated (12 900/mm³) and showed a shift to left phenomenon (segment 85%). C-reactive protein and an ionogram were within normal limits. Urine analysis revealed bacteriuria

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but with a negative culture. Because adnexal torsion and appendicitis could not be diagnosed with any certainty, it was initially decided to treat the patient with supportive care. However, 24 hours later, the pain had increased. Laparoscopic exploration with possible corrective surgery was recommended. The patient was well informed of the risks of surgery, the possible need for laparotomy, and the risk of preterm labor postoperatively.

Operative Procedure

While under general endotracheal anesthesia, the patient was placed in the Trendelenburg position, and the operating table was left tilted. A Foley catheter was inserted preoperatively to enable continuous monitoring of urine output during the operation. The Veress needle with a 2-mm cannula was inserted between the xiphoid process and uterine fundus under sonographic guidance to avoid uterine injury (**Figure 1**). Pneumoperitoneum was created by insufflation with carbon dioxide (CO₂) at a maximum intraabdominal pressure of 12 mm Hg. A 1.98-mm fiberoptic microlaparoscope (US Imagyn Laguna Niquel, California) with an attached camera was inserted through the cannula to visualize the intraabdominal organs.

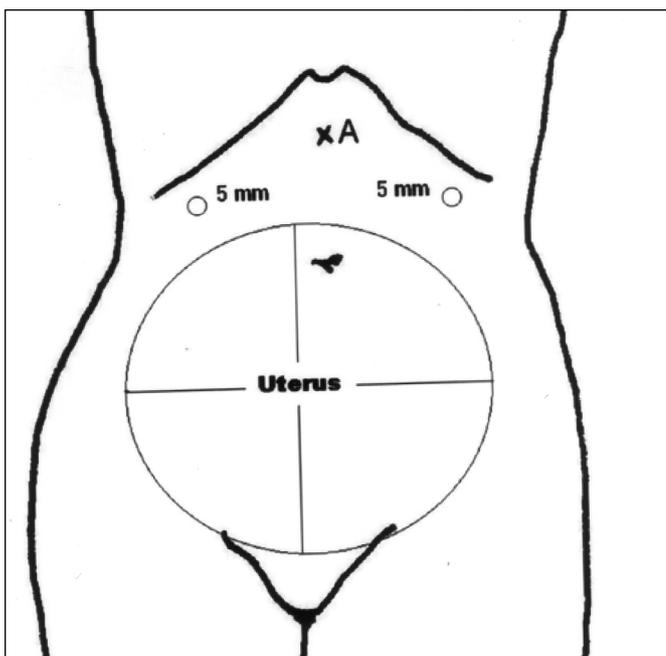


Figure 1. Abdominal port placements, with a circle marking the upper limits of the uterus. A Veress needle with a 2-mm cannula was inserted then replaced by the 5-mm trocar (A).

Laparoscopy revealed a right ovarian cyst measuring 6 cm without torsion (**Figure 2**), and a slightly edematous appendix. Periappendicitis coincidental to the right ovarian tumor was diagnosed. Two 5-mm trocars were introduced under visual control, one at the left upper quadrant, and the other at the opposite site. Then the 1.98-mm microlaparoscope was replaced by a 5-mm minilaparoscope followed by wedge resection of the right ovarian cyst and appendectomy with 2 Endoloop sutures (US Ethicon, Cincinnati, Ohio). An Endobag (US Ethicon, Cincinnati, Ohio) was used to contain the appendix and ovarian cyst before removal. Monitoring of the fetal heartbeat with transvaginal sonography was carried out during the entire procedure. The operation took approximately 70 minutes and was tolerated well by the patient. Pathologic examination of the excised specimen revealed a simple serous cyst and infiltration of inflammatory cells on the serous layer of the appendix.

Postoperative Course

After the operation, the patient received Cefamezine 1 gram every 8 hours for 3 doses. Uterine contractions were noted on postoperative day 2. Tocolysis with ritodrine were administered parenterally, and the doses were adjusted depending on the severity of uterine contractility. Ritodrine was stopped on postoperative day 14, and the patient was discharged on the fifteenth postoperative day. At 41 weeks of gestation, an apparently healthy female baby was born via Cesarean delivery due to induction failure. The weight of the newborn was

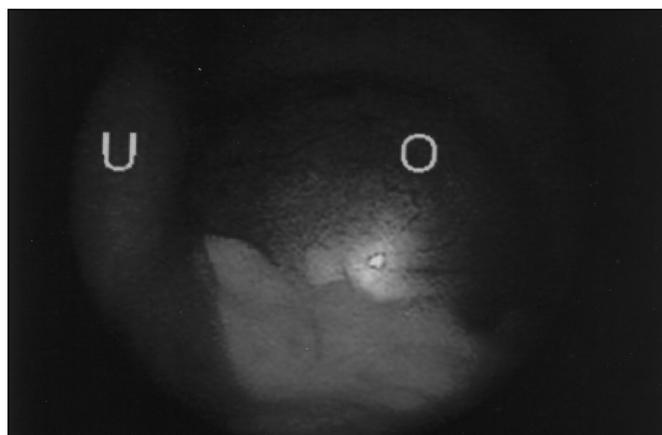


Figure 2. Microlaparoscopic panoramic view of the pelvis (U = uterus; O = ovarian cyst).

3300 grams, and Apgar scores were 9 and 10 at 1 and 5 minutes. The postpartum period was uneventful.

DISCUSSION

The use of laparoscopy in early pregnancy has been described; however, the enlarged uterus and relatively smaller abdominal cavity result in obvious difficulties when performing these procedures in advanced gestation. The risk of penetration of the uterus on the introduction of the Veress needle and subsequently the trocar has led to the recommendation for insertion of the needle and trocar under sonographic control, or the use of open laparoscopy.^{7,8} In our patient, we chose a microlaparoscopic approach to avoid the procedures of minilaparotomy. The trocars were inserted under visual control.

Compared with the minimal exposure offered by the standard laparotomy incision, laparoscopy provides an improved, magnified, and wider view of the entire operative field. In addition, laparoscopy requires less uterine manipulation, potentially leading to a decreased rate of preterm labor. Laparoscopy is also an excellent tool when the diagnosis in a pregnant patient is uncertain.

The fetus normally maintains a mild respiratory acidosis, which may facilitate tissue-oxygen delivery by shifting the oxyhemoglobin dissociation curve to the right. If maternal CO₂ is elevated, as it may be during CO₂ pneumoperitoneum, this exchange is impaired and may result in worsening fetal acidosis.⁹ However, the physiology of laparoscopic response to CO₂ pneumoperitoneum is complex and poorly understood. Thus, intraoperative fetal monitoring should be routinely performed in these patients so that if fetal distress develops, the pneumoperitoneum can be desufflated in an attempt to correct the problem. Transvaginal sonography must be used because the signal from abdominal ultrasound is lost during insufflation.

An additional concern unique to this laparoscopic surgery is the possibility of high intraabdominal pressure decreasing venous return and cardiac output, resulting in the reduction of uteroplacental blood perfusion. Limited insufflation pressure (below 12 mm Hg), the Trendelenburg position, and operating table left-tilt to avoid caval compression can minimize the risk of this complication. Another concern is that the type of anesthesia might affect the fetus. Regional anesthesia can be safely used and tolerated during the first and early second trimester.

However, in late second trimester, the spinal or epidural anesthesia does not extend to the level of the high trocar insertion; furthermore, the Trendelenburg position may also aggravate the low lung compliance caused by increasing intraabdominal pressure.

In our patient, we used a tocolytic agent to treat contractions with good results. The general use of a tocolytic agent after operation may reduce the incidence of premature contractions, premature delivery, and miscarriage.

This report suggests that laparoscopy can be safely performed during the late second trimester. However, surgeons should be aware of the high incidence of uterine injury associated with insertion of trocars, and that the enlarged uterine size may interfere with adequate visualization of intraabdominal organs. These observations strongly suggest that this laparoscopic procedure be carried out only by practitioners who have broad experience in operative laparoscopy. Intraoperative fetal monitoring should be performed to detect fetal distress early.

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